

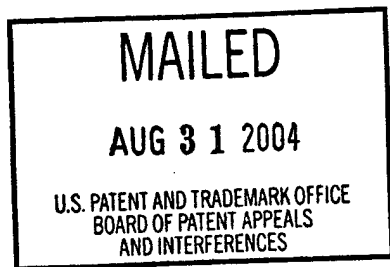
The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CRAIG S. LAMOY,
MICHAEL A. POMNEII, CHARLES K. ATWELL,
DALE CRAIG, BRADLEY A. REPP
and DALLAS WAYNE CULBERTSON



Appeal No. 2004-1850
Application 10/021,682

ON BRIEF

Before WARREN, OWENS and KRATZ, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 20. Claim 20 was cancelled subsequent to the final rejection, leaving claims 1 through 19 for consideration on appeal, which are all of the claims in the application.

Claim 1 is illustrative of the claims on appeal:

1. A system for supplying an enclosed protected zone having air intake means with supply having an inlet and that is filtered to remove contaminants created by chemical, biological or radiological conditions, said system comprising:

a) a three-stage air filter apparatus having an input fluidly coupled to said inlet and having an input, said three-stage air filter apparatus having a first, second and third coaxially

arranged annular filters, with the first filter being disposed within the second filter and the second filter being disposed within the third filter, and with the first filter being positioned closest to said input and the third filter being positioned closest to said output, said first filter filtering and removing particulates of at least a first size, said second filter filtering and removing aerosols and particulates of a size which is less than said first size, and said third filter comprising a gas absorber for removing gases; and

b) a supply fan having an input fluidly coupled to said output of said three-stage air filter apparatus and an output fluidly coupled to said air intake means of said protected zone, said supply fan supplying an air at a sufficient enough flow so as to provide said protected zone with a positive pressure.

The appealed claims, as represented by the above claim, are drawn to a system for supplying filtered air to an enclosed protected zone, comprising at least a three-stage air filter apparatus having coaxially arranged first, second and third annular filters, each of which removes different particulates, aerosols and gas created by chemical, biological or radiological conditions, and a supply fan to supply air in sufficient flow through the filter apparatus to provide positive pressure in the zone.

The references relied on by the examiner are:

Berghout et al. (Berghout)	3,218,997	Nov. 23, 1965
Thomaides	4,838,903	Jun. 13, 1989
Repp et al. (Repp)	4,962,371	Oct. 9, 1990
Frawley et al. (Frawley)	5,327,744	Jul. 12, 1994
You et al. (You)	5,890,367	Apr. 6, 1999
Linnersten et al. (Linnersten)	6,152,996	Nov. 28, 2000

The examiner has advanced the following grounds of rejection on appeal:

claims 1, 3, 10, 11, 18 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Linnersten in view of Thomaides (answer, pages 3-5);

claims 2 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Linnersten in view of Thomaides as applied to claims 1 and 11 above, and further in view of Berghout (answer, pages 5-6);

claims 4, 5, 13 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Linnersten in view of Thomaides as applied to claims 1 and 11 above, and further in view of Repp (answer, page 6);

claims 6 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Linnersten in view of Thomaides as applied to claims 1 and 11 above, and further in view of Frawley (answer, pages 6-7); and

claims 7 through 9, 16 and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Linnersten in view of Thomaides as applied to claims 1 and 11 above, and further in view of You (answer, pages 7-8).

Appellants state that the appealed claims “stand or fall together” (brief, page 9). Thus, we decide this appeal based on appealed claims 1, 2, 4, 6 and 9 as representative of the respective grounds of rejection. 37 CFR § 1.192(c)(7) (2003).

We affirm.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the answer and to the brief for a complete exposition thereof.

Opinion

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the supported position advanced by the examiner with respect to each of the grounds of rejection set forth in the answer that, *prima facie*, the claimed invention would have been obvious over the applied references to one of ordinary skill in this art at the time the claimed invention was made. We add the following to the examiner’s analysis with respect to the teachings of Linnersten.

It is well settled that in order to apply the prior art to a claim, the claim terms must first be interpreted by giving them the broadest reasonable interpretation in light of the written description in the specification, including the drawings, as it would be interpreted by one of ordinary skill in this art, without reading into the claims any limitation or particular embodiment which is disclosed in the specification. *See, e.g., In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). The plain language of appealed claim 1 specifies that the claimed system comprises at least a three-stage air filter apparatus having coaxially arranged annular filters consisting of an inner first filter, which removes particulates, a middle second filter, which removes smaller particulates and any aerosols, and an outer third filter, which removes gases, wherein the first filter is disposed, that is, positioned, or inserted within, that is, inside, the second filter, which is disposed, that is, positioned, or inserted within, that is, inside, the third filter. *See, e.g.,* specification **FIGs. 2 and 3** and associated disclosure (e.g., page 4, lines 23-28, and page 6, line 24, to page 7, line 12). Thus, the air filter apparatus containing the assembled

coaxially arranged annular filters can be termed an “inside-out” device because the air must flow inside the center cylinder formed by the coaxially arranged filters to enter the inner first filter, proceed through the middle second filter, exit through the outer third filter in order to provide sequential separation from the air of coarse particulates to gas particles.

The system has an air “supply fan” fluidly coupled to the output of the air filter apparatus and to the intake of a protected zone to supply air in sufficient flow through the filter apparatus in order to provide positive pressure in the zone, that is, the fan pulls the air through the coaxially arranged filters in the air filter apparatus. We further determine that the transitional term “comprising” opens appealed claim 1 to include systems which include components in addition to the air filter apparatus and supply fan components, and opens the air filter apparatus and supply fan components to include additional unspecified elements. *See Vehicular Technologies Corp. v. Titan Wheel Int’l Inc.*, 212 F.3d 1377, 1383, 54 USPQ2d 1841, 1845 (Fed. Cir. 2000); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981).

We have compared appealed claim 1 as we have interpreted it above with Linnersten, and we find that, *prima facie*, Linnersten would have disclosed to one of ordinary skill in this art a multi-element filter system which sequentially removes particulates and gas particles from air, and which can be used in the air filter apparatus of systems providing blower or motor driven air to closed cabins, that is, protected zones, of, among others, military tanks and aircraft, in a manner to maintain positive cabin pressure (col. 1, l. 60, to col. 2, l. 23; Linnersten **FIGs. 1, 2 and 8**, and cols. 3-7; *see also* col. 1, ll. 17-46). We find that one of ordinary skill in this art armed with the knowledge in the art would have recognized that the blower or motor would include an air “supply fan” and that the maintained cabin pressure would have been “positive pressure” resulting from the air thus supplied to the system (col. 2, ll. 14-17 and 23-24). Indeed, one of ordinary skill in this art would have recognized that an air “supply fan” would have been necessary to move air through the multi-element filters of Linnersten, and this person would have known that in the art, such a fan is ordinarily positioned downstream of the air filter in air supply systems.

We further find that Linnersten would have disclosed that a multi-element filter contains, in order, a particulate prefilter **15**, a second cylindrical particulate filter **13** and a vapor and/or gas

phase sorbent filter **12**, wherein “[a] protective cylindrical screen **14** may be provided around the exterior of the cylinder **13**,” and illustrates the positioning of the three filters with a protective screen in cylindrical form in an “outside-in” air filter apparatus in Linnersten **FIG. 2** (e.g., col. 2, ll. 25-48, col. 3, l. 4, to col. 5, l. 37; *see also* Linnersten **FIG. 1**).

The prefilter **15** is disclosed to be a removable element that protects the cylindrical particulate filter **13**, and “is preferably provided on the exterior of [protective] screen **14**” (e.g., col. 2, ll. 30-33, col. 3, ll. 28-30 and 34-35). We find that one of ordinary skill in this art would have reasonably inferred from this disclosure that prefilter **15** is to be disposed or positioned upstream of and next to cylindrical particulate filter **13**, and in this respect, can be on either side of protective cylindrical screen **14**. When on the exterior or outside of protective screen **14**, the prefilter **15** is an “outer wrap that can be removed from the [air cleaner] element **11** for servicing or cleaning” by sliding the prefilter axially from the air cleaner element (col. 3, ll. 35-45).

Linnersten would have further disclosed that filters **13** and **12** can be “detachable from each other” and that “[i]n such an arrangement, the filter elements would be nested together in a coaxial fashion, and either of the filter elements could be removed as needed” (col. 6, ll. 22-34). Linnersten illustrates such an arrangement in the air filter apparatus of Linnersten **FIG. 8**, with a “prefilter layer (not shown), which may be separately removable . . . [and] may be provided on the exterior of the screen **314**,” particulate filter **313** and sorbent filter **312** (col. 6, ll. 35-50).

Linnersten teaches that while the multi-element filter arrangement is illustrated in an “outside-in” filter apparatus,

it is also possible to construct an air cleaner element according to the present invention in which the air flows in the opposite direction, entering the air cleaner generally along its axis and flowing radially outwardly through the filter layers. In such an arrangement, the . . . [particulate] filter would be located inside the sorbent filter. Likewise, the other embodiments of this invention could also be made inside-out in a similar manner. [Col. 5, ll. 32-44.]

We find that one of ordinary skill in this art would have reasonably inferred from this disclosure of an “inside-out” filter apparatus and the disclosure that the detached filter elements can be nested in a coaxial arrangement, taken in light of all of the other disclosures to the effect that the multi-element filter can be shaped as desired (e.g., col. 5, ll. 45-47; col. 6, ll. 55-58). We find that this person would have constructed an “inside-out” multi-component filter with the

detached prefilter disposed or positioned upstream of and next to or inside the detached cylindrical particulate filter on the inside of the protective cylindrical screen, which particulate filter is disposed or positioned upstream of and next to or inside the detached sorbent filter in a coaxial arrangement in similar manner to that shown in Linnersten **FIG. 8**, for use in an “inside-out” air filter apparatus.

Thus, in view of this disclosure and the other disclosure that we have discussed above, we find that, *prima facie*, as a matter of fact, Linnersten would have described to one of ordinary skill in this art an “inside-out” three-stage air filter apparatus having three coaxially arranged filters, that can be fluidly coupled to the supply fan of an air supply system for a protected zone in a manner that positive pressure is maintained in the protected zone.

Accordingly, *prima facie*, as a matter of fact Linnersten discloses a system falling within appealed claim 1 as we have interpreted this claim above, because the disclosed system has each and every element of the claimed system, arranged as required by claim 1, either expressly or under the principles of inherency,¹ establishing that the claimed system encompassed by claim 1 lacks novelty. Thus, while the issue here has been framed by the examiner as one of obviousness under § 103(a), the evidence of a lack of novelty of the claimed system as encompassed by claim 1 is, of course, “the *ultimate* obviousness.” *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569,

¹ In order to establish a lack of novelty, each and every element of the claimed invention, arranged as required by the claim, must be found in a single prior art reference, either expressly or under the principles of inherency. *See generally*, *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677-78, 7 USPQ 1315, 1317 (Fed. Cir. 1988); *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick*, 730 F.2d 1452, 1458, 221 USPQ 481, 485 (Fed. Cir. 1984). Whether the teachings and inferences that one skilled in this art would have found in the disclosure of an applied reference would have placed this person in possession of the claimed invention, taking into account this person’s own knowledge of the particular art, is a question of fact. *See generally*, *In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), and cases cited therein (a reference anticipates the claimed method if the step that is not disclosed therein “is within the knowledge of the skilled artisan.”); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968) (“[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom.”).

571 (CCPA 1982). Thus, to the extent that the system disclosed by Linnersten anticipates the claimed system encompassed by claim 1, the case of obviousness is irrebuttable. *Id.*

Therefore, since a *prima facie* case of obviousness has been established by the examiner over the combined teachings of Linnersten and Thomaides alone,² and as further combined with each of Berghout, Repp, Frawley and You, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants' arguments in the brief. *See generally, In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

We initial note appellants' contention that a finding of "inherency" as a matter of fact cannot be used to supporting a finding of obviousness under § 103(a) (brief, pages 13-16). To the contrary, as our reviewing Court stated in *In re Napier*, 55 F.3d 610, 34 USPQ2d 1782 (Fed. Cir. 1995),

[t]he inherent teachings of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness. *See In re Grasselli*, 713 F.2d 731, 218 USPQ 769 (Fed. Cir. 1983). [55 F.3d at 613, 34 USPQ2d 1782, 1784.]

In any event, whether a claim element is inherent in the disclosure of a prior art reference as a matter of fact, *see, e.g., In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); *Napier, supra*, and whether the disclosure of a prior art reference would have placed one of ordinary skill in the art in possession of the claimed invention including the claim element, given the knowledge of this person and the specific teachings and inferences which this person would have thus found in the reference as a matter of fact, *see, e.g., Graves, supra; In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *Preda, supra*, are different considerations.

² We have not considered the combined teachings of Linnersten and Thomaides along with either or both of Repp and Frawley as suggested by the examiner in the ground of rejection of appealed claim 1 at page 4 of the answer and at page 4 of the final action mailed September 6, 2003 (Paper No. 6), because, as appellants point out in the brief (page 8 n.1), the references are not included in the statement of the ground of rejection of this claim (*see* answer, page 3). *See In re Hoch*, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970).

In this respect, contrary to appellants' argument with respect to the use of the "blower" in Linnersten (brief, page 15), it appears to us that the examiner is using "inherently anticipates" (answer, pages 4 and 8) in the sense that one of ordinary skill in this art armed with knowledge of air supply systems for closed cabins or protected zones would have recognized that the air supply systems described by Linnersten (col. 2, ll. 14-24) would have used a fan in connection with a blower or motor to provide an air flow in order to maintain positive cabin pressure, that is positioned down stream of the air filter apparatus, as we discussed above. Indeed, this person would have known that air is pulled rather than pushed by a fan through an air filter apparatus in an air supply system.

Appellants further contend that the prefilter is positioned on the exterior of the protective screen of the particulate filter in Linnersten when the multi-element filter of the reference is in the "inside-out" configuration, and thus Thomaides "teaches away from the arrangement at column 3, lines 26-31, . . . that 'sock,' i.e., unsupported filters, cannot be employed in systems where the flow is directed radially outward through the prefilter and filter, respectively," citing *In re Gurley*, 31 U.S.P.Q.2d 1130 (Fed. Cir. 1994) (brief, pages 16-17).

Appellants are relying on the teaching of one reference, Thomaides, to discredit what would reasonably appear to be the teachings and inferences that one of ordinary skill in the art would have reasonably found in another reference, Linnersten. The guidance of our reviewing Court in *Gurley* is directed to evidence of "teaching away" in a single reference.³ Thus, we consider whether one of ordinary skill in this art would have accepted the evidence appellants point to in Thomaides as establishing that the prefilter as taught in Linnersten would not function in an "inside-out" multi-component filter configuration. See *In re Young*, 927 F.2d 588, 591-92, 18 USPQ2d 1089, 1091-92 (Fed. Cir. 1991).

³ "A reference may be said to teach away when a person of ordinary skill, upon reading the reference would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the applicant. [Citations omitted.]" 27 F.3d at 552-53, 31 USPQ2d at 1131-32.

The teaching of Thomaides at issue involves the acknowledged prior art therein of a “sock that is wrapped around the outside of the candle[, a thick bed fiber filter,] to trap particles before they reach the aerosol primary filter” (col. 1, ll. 5 and 32-34), and the teaching therein that

[t]he prior art ‘sock’ was not capable of [being inserted internally into the main filter] since it was not rigid. It was merely wrapped around the outside of the main filter, and depended on the main filter for structural support. The sock could not be used in inside/out type filtering operations. [Col. 3, ll. 25-31.]

The “sock” teachings in Thomaides correspond to the teachings of Linnersten that when prefilter **15** is “preferably” disposed or position on the exterior of protective screen **14**, it is a removable “outer wrap that can be removed from” multiple-stage air cleaner element **11** for cleaning (col. 3, ll. 34-37). However, one of ordinary skill in the art would have considered Linnersten for all the teachings and inferences that this person would have found therein, not just the preferred embodiments. *See Fracalossi*, 681 F.2d at 794 and n.1, 215 USPQ at 570 and n.1 (citing *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976); *In re Boe*, 355 F.2d 961, 964, 148 USPQ 507, 510 (CCPA 1966)). Thus, one of ordinary skill in the art would have found in Linnersten the teaching that prefilter **15** can be disposing or positioning on the *interior* of protective screen **14**, that is, disposed or positioned between protective screen **14** and particulate filter **13**, as we discussed above. Furthermore, this person would have inferred from such teachings that protective screen **14** would protect and hold prefilter **15** deposed or positioned next to particulate filter **13**. Accordingly, we determine that one of ordinary skill in this art would have found that the “sock” teachings in Thomaides do not apply when prefilter **15** is disposing or positioning on the interior of protective screen **14**, and that the so disposed or positioned prefilter **15** would function in an “inside-out” multi-element filter configuration.

We further cannot agree with appellants (brief, pages 17-19) that the examiner’s reliance on Thomaides to show that a prefilter can be positioned with respect to the main filter “so that air can flow inwardly or outwardly,” which would include an “inside-out” multi-component filter configuration (answer, pages 4-5 and 8-9), is improper because of differences in filter material, and that Thomaides is non-analogous art (brief, pages 17-19). We find that Thomaides shows the concept for which it is relied on by the examiner. As the examiner explains in response to appellants’ arguments in these respects, Thomaides discloses “an unsupported filter” while “the

Linnersten apparatus uses supported filters” (answer, page 9). The examiner’s reliance on Thomaides in this manner is without respect to the relative filter construction material, and in any event, Thomaides is clearly analogous art with respect to the air filters of Linnersten and the air filters of appealed claim 1 because it is simply within the same field of endeavor which is air filters. *See In re Clay*, 966 F.2d 656, 658, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).

Appellants submit that the combined teachings of Linnersten and Thomaides do not provide for the claimed requirements that an “air supply fan” provide the “protected zone with a positive pressure,” and would have us conclude that the examiner relied on hindsight based on appellants’ disclosure to arrive at the claimed system encompassed by appealed claim 1 (brief, pages 19-22). We fail to find where in the answer the examiner relied on Thomaides with respect to the specified air supply fan and supplying positive pressure therewith to the protected zone, and indeed, the examiner states that “[t]he blower is a disclosed feature of the Linnersten system” and that “none of the other prior art patents are relied upon for motivating one to use a fan in the Linnersten system”:(answer, page 9-10).

Appellants argue each of the remaining grounds of rejection which pertain to appealed claims 2, 4, 6 and 9, respectively, on the basis of whether the single reference applied in each instance to the combination of Linnersten and Thomaides would teach away from the application of Linnersten to the claimed system encompassed by appealed claim 1, and do not address the teachings in each additional reference relied on by the examiner in that ground of rejection, as the examiner points out (answer, page 10). With respect to appellant’s arguments, we pointed out above that one of ordinary skill in the art armed with the knowledge of air supply systems for protected zones in the art would have found in Linnersten teachings and inferences to use a “supply fan” to provide the “protective zone with positive pressure” (*see above* p. 4). Appellants have not demonstrated that the disclosure in the additional references, separately or severally, would have led one of ordinary skill in this art armed with the knowledge in the art away from the teachings and inferences that this person would have found in the disclosure of Linnersten.

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Linnersten and Thomaides alone and as further combined with each of Berghout, Repp, Frawley and You with

appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 19 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Chas. F. Keen

CHARLES F. WARREN
Administrative Patent Judge

Terry J. Owens

TERRY J. OWENS
Administrative Patent Judge

Peter F. Kest

PETER F. KRATZ
Administrative Patent Judge

BOARD OF PATENT
APPEALS AND
INTERFERENCES

Appeal No. 2004-1850
Application 10/021,682

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